CLAIMS

1. In a structure for removably attaching a tool holder for supporting a tool to a tapered attachment hole of a main shaft of a machining tool,

a tool holder attachment structure wherein:

a shank including a tapered outer perimeter surface is disposed on said tool holder;

a plurality of elastic engagement pieces capable of abutting an outer perimeter surface of said tapered outer perimeter surface of said tool holder and being elastically deformed slightly in a radial direction are disposed at an inner surface section of said attachment hole of said main shaft;

said shank is fitted to said attachment hole of said main shaft and said tool holder is secured to said main shaft with said plurality of elastic engagement pieces elastically deformed in said radial direction.

2. A tool holder attachment structure as described in claim 1 wherein:

a plurality of ring-shaped grooves are formed at said inner surface section of said attachment hole of said main shaft at a predetermined interval along said axial center, said plurality of ring-shaped grooves and said plurality of elastic engagement pieces being arranged in an alternating manner along said axial center; and

said formation of said plurality of ring-shaped grooves allows said plurality of elastic engagement pieces to be formed integrally with said main shaft.

3. A tool holder attachment structure as described in claim 2 wherein said elastic engagement pieces are sloped relative to a plane perpendicular to said axial center of said main shaft.

4. A tool holder attachment structure as described in claim 3 wherein, toward an inner perimeter, said elastic engagement pieces are sloped toward a wider end of a tapered shape of said attachment hole.

5. A tool holder attachment structure as described in claim 2 wherein said elastic engagement pieces are formed parallel to a plane perpendicular to said axial center of said main shaft.

6. A tool holder attachment structure as described in claim 4 wherein a plurality of grooves extending longitudinally along said attachment hole are formed at said inner surface section of said attachment hole in a symmetrical arrangement relative to said axial center.

7. A tool holder attachment structure as described in any one of claim 1 through claim 6 wherein an elastic flange abuts an outer end surface of said main shaft and elastically deforms toward said axial center when said tool holder is mounted on said main shaft.

8. A tool holder attachment structure as described in claim 7 wherein:

said elastic flange is formed with a ring shape;

a ring-shaped groove is formed at a radially inward position on said elastic flange; and

a ring-shaped sloped groove is formed at a radially outward position on said elastic flange.

9. A tool holder attachment structure as described in claim 1 wherein said plurality of elastic engagement pieces are formed as a plurality of collar-shaped members secured to said inner surface section of said attachment hole of said main shaft.

10. A tool holder attachment structure as described in any one of claim 1 through claim 6 wherein a cross-section shape of said attachment hole and said shank along a plane perpendicular to said axial center forms a non-circular shape capable of transferring rotational torque so that rotational torque can be transferred from said attachment hole of said main shaft to said shank without using a key.